

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

The examiner rejects Claims 18, 24 under 35 U.S.C. § 103(a) as being unpatentable over Watson et al. US Patent Number 6,195,032 in view of Sevenhans et al. US Patent Number 5,422,889 and Al-Awadhi . US patent Number 6,683,550. The examiner states that regarding Claims 18 and 24, Watson et al. discloses a successive approximation apparatus and method but does not explicitly disclose a SAR ADC that comprises a single multi-bit ADC coupled to an output of an amplifier. The examiner states that Sevenhans et al. discloses a system that comprises an ADC and notes that the single ADC in fig. 2 that is coupled to an output of an amplifier. The examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Watson et al.'s system with that of Sevenhans et al. in order to remove offset from an input signal being input thereto is assigned slots. The examiner states that this combination discloses all the limitations as discussed above except that the system that has a multi-bit DAC. The examiner states that Al-Awadhi shows a multi-bit ADC and specifically refers to the abstract. The examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Watson et al. and Sevenhans et al.'s system with that of Al-Awadhi in order to convert an analog input signal into a digital signal using multi-bit delta sigma modulator. The examiner states that the combination of the Watson et al., Sevenhans et al. and Al-Awadhi would achieve the same end result as the claimed invention.

This rejection is respectfully traversed. The examiner has correctly classified Al-

Awadhi as a multi-bit delta sigma modulator. This is clear from the figure shown on the first page of the patent. As it is well known to those skilled in the ADC art, delta sigma ADCs utilize oversampling as can be clearly be seen by the list of "other publications" citings of the Al-Awadhi patent. The present invention, on the other hand, utilizes undersampling. The undersampling process is not compatible with the over sampling sigma delta ADC since the sigma delta technique cannot operate directly on the input signal because of its' oversampling averaging nature. Therefore, the utilization of a sigma delta converter it mutually exclusion to the undersampling technique of the present invention. Accordingly, the examiner's combination must fail. Independent Claim 14 already recites an undersampling digitizer. Claims 18 and 24 have been amended to recite the utilization of undersampling. Therefore, these claims are distinguished from the combination of references cited by the examiner.

The examiner rejects Claims 2-11 and 13-23 under 35 U.S.C. § 103(a) as being unpatentable over Watson et al. in view Sevenhans et al. and Al-Awadhi as applied to claim 24 above and further in view of Burns. The patent ability of Claim 24 having been shown above, these claims are patentable for the same reasons.

Accordingly, Applicants believe that the application is in condition for allowance and such action is respectfully requested.

Respectfully submitted,
Texas Instruments Incorporated

/William B Kempler/
William B. Kempler
Senior Corporate Patent Counsel
Reg. No. 28,228
Tel.: (972) 917-5452